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Instructions for use

A NEW SPECIES RELATED TO  
*PHYTOMYZA SAXIFRAGAE* HERING

(Diptera, Agromyzidae)\*

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The present paper deals with descriptions of two Japanese leaf-miners on the Saxifragaceae, the one, *Phytomyza saxifragae* HERING, has been reported from Germany, Austria, Yugoslavia and Romania, while the other, which is closely related to the former, is apparently new to science.

Before going further, I wish to express my cordial thanks to Prof. Dr. MASAOKI TOKUNAGA for his kind guidance and reading through the manuscript, and to Mr. YUTAKA NISHIJIMA of the Hokkaido University for supplying the specimens.

*Phytomyza saxifragae* HERING

*Phytomyza saxifragae* HERING, 1924, Zeitschr. f. wiss. Ins. Biol., 19: 38; HERING, 1924, Zeitschr. f. Morph. u. Ökol. d. Tiere, 2: 243; DE MEIJERE, 1926, Tijdschr. Ent., 69: 289; HERING, 1927, Tierw. Deutschl., 6: 136; STARÝ, 1930, Act. Soc. Nat. Morav., 6 (6): 17; SÉGUY, 1933-34, Encyc. Ent., B, 2: 230; HENDEL, 1936, in LINDNER: Die Flieg. palaearkt. Reg., 59: 473; DE MEIJERE, 1933, Tijdschr. Ent., 81: 92.

Head: Front at line of anterior ocellus one and one-half times to twice as wide as either eye, as broad as long, its lateral sides converging ventrally; parafrontals each about one-fifth width of front, sides distinctly converging ventrally from level of *ori*; frontal lunule semicircular, almost as high as length between its dorsal margin and anterior ocellus. Fronto-orbital bristles four pairs; *ors* two, each equal in length, first *ors* directed up- and outwards, about one and one-half times as far from *vti* as from second, second directed up- and slightly outwards, located before middle of front; *ori* two, second short, directed inwards, sometimes a setulae anterior to second; orbital hairs distinct, arranged in a row; *oc* long. In profile parafrontals slightly raised above eye margin, but parafacials near antennal bases not visible; cheeks in middle part about one-fourth eye height; eyes oval, with minute hairs. Antennae with bases slightly separated from each other by carina; third segment slightly shorter than broad, with pubescence; arista longer than antenna, basal one-fourth swollen, pubescent. Vibrissae long, accompanying with four to five peristomal setae. Palpi of normal size.

\* Contribution from the Entomological Laboratory, Saikyo University, Kyoto.  
No. 46.

Thorax: Mesonotum with 3+1 *dc*, second three-fourths as long as first, fourth shorter than second and located slightly before level of *prs*; *arc* in five to six irregular rows, about four rows of them ending behind level of first *dc*; ten to twelve setulae in each *ia* row behind transverse suture; *pa* two, inner *pa* three-fifths as long as outer; humeri each with about seven setulae plus a long *h*. Mesopleura with one to three dorsally directed and three to four posteriorly directed setulae; sternopleura with a setula anterior to *stpl*.

Wing: Second costal section about three and one-half times as long as fourth, third almost as long as fourth;  $r_{4+5}$  slightly curved,  $m_{1+2}$  diverging from  $r_{4+5}$ .

Abdomen: Each tergite with sparse setae, marginal setae longer; sixth tergite almost as long as fifth. Basal segment of ovipositor entirely pubescent.

Colouration: Head brownish black; frontalia, parafacials and postorbits dark brown; genae pale brown; lunule pruinose; face subshiny; oral margin brown linearly; antennae and palpi brownish black. Thorax and abdomen blackish brown; mesonotum and scutellum dusted with gray; mesopleural suture and base of wing whitish. Legs brownish black, distal parts of  $f_2$  brown but those of others slightly paler. Wings grayish hyaline, veins brown; calypteres brownish white, with margins and fringe brown; halteres whitish yellow. Abdomen shiny; sixth tergite of female with caudal margin whitish; ninth tergite of male brownish black, cerci brown; basal segment of ovipositor black.

Length: Body 2-2½ mm., wing 2⅓-2½ mm.

Specimens examined: 3 ♂♂, 4 ♀♀, 25-28. VI. 1948, Jyōzankei, Hokkaido, Y. NISHIJIMA leg., reared from larvae mining leaves of *Saxifraga sachalinensis* FR. SCHM.

Habitat: Japan (Hokkaido).

*Phytomyza hydrangeae* sp. nov.

The points differentiating this species from *P. saxifragae* are definite as follows:

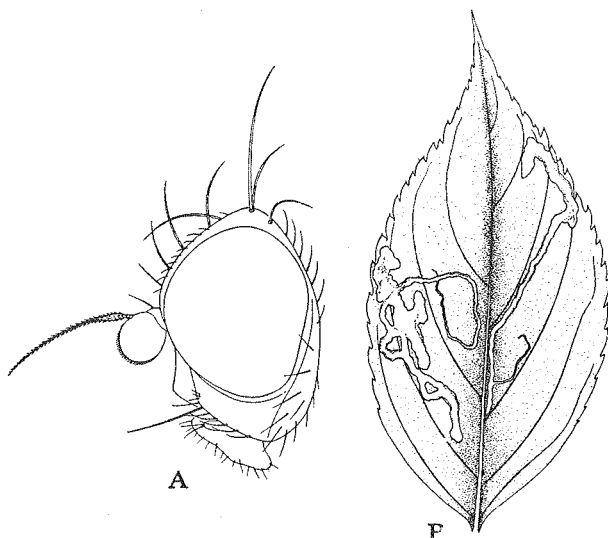
Head: Front about two and one-third times as wide as eye, somewhat broader than long (1:0.8); lunule lower than semicircular, its height about half length between its dorsal margin and anterior ocellus. Fronto-orbitals four pairs; *ors* each directed up- and outwards, first *ors* slightly nearer to second than to *vti*, first *ori* directed in- and slightly upwards. Eyes with sparse minute hairs. Antennae with bases approximated each together; third segment as long as broad. Peristomal setae five to six along subcranial margin, two to four setulae above *vi*.

Thorax: Fourth *dc* almost on level of *prs*; five to six irregular rows of *acr* ending slightly behind level of second *dc*; *ia* seven to eight behind transverse suture in each *ia* row; inner *pa* one-third length of outer; humeri each with six setulae plus *h*; mesopleura with a dorsally directed and two posteriorly directed setulae.

Wing: Second costal section four times as long as fourth.

Male genitalia: Typical for the genus with the following distinct modification. Phallus with anterior piece of distal section claw-like in lateral aspect, base strongly sclerotized, bifurcated near by tip.

Colouration: Frontalia and lunule pale black, slightly brownish; ocellar triangle and occiput black, dorsal half of frontalia paler; parafrontals yellowish white, but small area between each *or* and orbits dusky; black of occiput reaching ocellar triangle and extending to bases of both *vt* bristles dorsally and upper half of posterior eye-margins laterally; inner *vt* growing at edge of brown area; parafacials and genae yellow, somewhat dusky; face pale yellow, dorsal half of carina and antennal grooves brownish; antennae black, but first, apical margin



*Phytomyza hydrangeae* n. sp.

A: Head in profile.

B: Mines on leaf of *Hydrangea paniculata* S.

of second and basal part of third brown; palpi and anteclypeus brownish yellow. Mesonotum with black gray-dusted area which extends laterally to *prs* and beyond *sa*; *pa* arising from dirty yellow; lateral stripes yellowish white and humeri somewhat darker; pleura brown, but meso-, ptero- and metapleura paler, slightly gray-dusted, about dorsal half and caudal margin of mesopleura and dorsal two-thirds of pteropleura yellowish white, dorsal margin of sternopleura somewhat yellowish. Scutellum dirty pale yellow, slightly brownish laterally. Wings, hyaline, bases of costa and radius white; calypter white, with margin and fringe pale brown; halteres yellowish white. Legs with coxae and femora black, all

knees yellow, tibiae and tarsi yellowish brown, paler in fore legs. Abdomen and ninth tergite subshining brown, first and second tergites broadly and third to fifth narrowly white laterally.

Length: Body about 2 mm., wing  $2\frac{2}{5}$  mm.

Habitat: Japan (Honshu).

Holotype: ♂, 12. III. 1955, Mt. Hira, Shiga Pref., reared by myself, deposited in the Entomological Laboratory of Saikyo University.

This species is also closely related to *P. milii* KALTENBACH, from which it can be easily distinguished by the yellow lateral stripes of mesonotum.

Puparium: Dark brown, subshiny; subcircular,  $1\frac{4}{5}$  mm. in length and  $1\frac{1}{2}$  mm. in width; dorsal and ventral sides slightly and equally arched, lateral sides characteristically projected as ridges; segmentation indistinct on dorso- and ventromedian areas. Each spiracle evidently prominent; anterior spiracles each two-horned, posterior spiracles each with seventeen to twenty-one bulbs; a pair of distinct spine-like tubercles situated beside anus.

Ecological notes: The larvae make an ophiome on the leaves of *Hydrangea paniculata* SIEB. The mines are pale green in color, 95 to 120 mm. in length, very narrow at first but broadening to about  $2\frac{3}{4}$  mm. in width near the end, of upper surface type, the black grains of frass are scattered irregularly on the center or sides of mine. The mature larvae escape through the slits made on the lower surface of the end of mines, the pupation takes place on the leaf surface, and then the pupae fall down on the ground.